Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, DC 20554

In the Matter of) ET-Docket No. 93-62

PETITION FOR RECONSIDERATION

Regarding FCC Memorandum Opinion and Order FCC 96-487

Reported in the Federal Register January 22, 1997

Submitted by the Ad-hoc Association of Parties Concerned About the Federal Communications Commission's Radiofrequency Health and Safety Rules
PO Box 7577
Olympia, WA 98507-7577 Tel: (206) 722-8306

and submitted by other parties listed in Exhibit 1

February 21, 1997

TABLE OF CONTENTS

Summary

is found not to be just, fair, and in the public interest, then,

2. End the transition period without delay for all base station PCS facilities and operations, and for all new and renewal applications.

3. Be consistent in its policies and decisions that it does not have expertise on the health effects of RF exposure, and act in the public interest so that in matters and standard setting related to (i) the biological and health effects of RF exposure, and to (ii) the relationship between environmental exposure and internal rate of absorption of RF energy, the Commission seeks out comment on this Petition from federal health and safety agencies and defers to the advice of these agencies whose advice the Commission has sought in the ET-Docket 93-62 proceeding. The Commission should seek such comments from federal health and safety agencies because these agencies may also have overlooked, misunderstood, or not have available material noted in this Petition and which is substantially significant to when the Commission's transition period should end to best serve the public interest.

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of	)	ET-Docket No. 93-62
Guidelines for Evaluating the Environmental	)	and First Memorandum Opinion and
Effects of Radiofrequency Radiation	)	Order FCC 96-487

To: The Commission

PETITION FOR RECONSIDERATION

The Ad-hoc Association of Parties Concerned About the Federal Communications Commission's Radiofrequency ("RF") Health and Safety Rules ("Ad-Hoc Association), of which the Rainier Valley Association For Safe Wireless Technology ("Rainier Association), as in the Washington Council For Safe Wireless Technology is a member, hereby submits this Petition for Reconsideration ("Petition") of the Commission's First Memorandum Opinion and Order FCC 96-487 ("First MO&O") issued in the above docket with public notice published in the Federal Register on January 22, 1997 Vol.62, No. 14, pages 3232-3240. Some members of the Ad-Hoc Association are listed in the Exhibits of the Ad-Hoc Association's Petition for Reconsideration of the Commission Rule and Order 96-326 ("R&O") ("Ad-Hoc 96-326 Petition", and filed September 9, 1996), and some members of the Rainier Association are given in Exhibit 1 herein. The First MO&O orders delays implementing the Commission's new rules from January 1, 1997 to September 1, 1997. Such delay allows RF exposure rules insufficiently protective to remain in effect, and the Commission has not given justifiable reasons for such delay. Accordingly, this previously approved applications, [illegible] rules without delay, and to recertify least recertify previously approved applications by the rationale and definitions of the Commissions new rules if not also by their numeric RF exposure limits. Such , request is in accordance with 47 CFR §1.429(i) which provides that, *"Any order dispensing of a petition for reconsideration which modifies rules adopted by the original order is, to the extent of such*

modification, subject to reconsideration in the same manner as the original order." Thus, the Petition is being timely filed pursuant to 47 CFR Part 1 §1.4(b)(1) and §1.429.

1. Procedural considerations:

1.1 Perhaps due to overlooked consultation with federal health agencies concerning evaluating Petitions for Reconsideration of FCC 96-326, including the Ad-Hoc 96-326 Petition, and perhaps due to the Commission or federal health agencies misunderstanding, overlooking, or being aware of new information, it is respectfully noted that the First MO&O needs modifying to meet significant public health and safety concerns directly affecting some petitioners due to the Commission delaying implementation of its new RF heath and safety rules. For the most part, this Petition is based upon failure of the Commission, or of the federal health agencies to which the Commission may defer, to properly assess information available to the Commission in the record or referenced therein, including that given in the Ad-Hoc 96-326 Petition. To the extent this Petition relies on findings that were not previously presented to the Commission, these facts and reports became publicly available after the last opportunity for filing in this matter, and in any event, consideration of these facts significantly relates to the adverse affect on the public health and public interest of delaying implementation given in 47 CFR §1.1307 per FCC 96-326. Should the Commission find it appropriate to modify other sections of 47 CFR to implement the intent of the requests in this Petition, it is requested that it do so, and make any other modifications it finds to be just and proper.

1.2 The Commission is urged to defer to the federal public health and safety agencies for matters related to RF safety and health as they impact on the urgency to implement the Commission's new rules. This is so since the Commission has correctly decided, *"The Commission has stressed repeatedly that it is not a health and safety agency and would defer to the judgment of these expert [Federal health and safety] agencies with respect to determining appropriate levels of safe exposure to RF energy."* [R&O 96-326, para. 28]. Agencies the Commission consulted include the Environmental Protection Agency ("EPA"), National Institute of Occupational Safety and Health ("NIOSH"), Food and Drug Administration ("FDA"), and Occupational Safety and Health Administration ("OSHA") [as given in FCC 96-326]. To the extent such consultation has

occurred these agencies may have misunderstood, overlooked, or not had available new information referenced herein or in the Ad-Hoc 96-326 Petition, so their reconsideration of this Petition's claims of the adverse health and safety impacts of the implementation delay is just, fair, consistent with Commission policy and decisions, and in the public interest.

1.3. Petitioners are directly affected: Among those subscribing to this Petition for Reconsideration are petitioners who are directly affected by the Commission final rule. These include the Association some of whose members (i) either live in the immediate area by a transmitter under Commission authority or (ii) whose children attend a school with such facilities or (iii) whose children attend a school for which a permit has been issued to build such a facility; and similarly (i),(ii), or (iii) apply to some other parties subscribing to this petition.

1.4. Proper procedure, consistent with Commission policy and in the public interest has not been followed: In accordance with §1.429(i) an order of the Commission should *"contain a concise statement of the reasons for the action taken."* However, it its First MO&O published in the Federal Register January 22, 1997 (noted above), the Commission only states, *"we do not concur with petitioners who suggest that granting any extension of the transition period will have* [redacted] adverse effects at levels below the hazard threshold from which its limits were derived still permit the Commission deciding to delay implementation to be in the public interest? Thus, stating that the Commission does not concur with the Ad-Hoc Association, does not meet the requirement for providing a reason - for stating the Commission "does not concur" provides no reasons for such non-concurrence.

Moreover, the Commission has stated that it does not consider itself an expert in health matters, and that it would base its decisions upon recommendations from federal health agencies. [see 2.1 above] Hence, it is inconsistent with the Commission's own policies for it to pass judgment on many of the elements of the Ad-Hoc Association's reasons for opposition. Rather, it

is just, fair, consistent with Commission policy, and in the public interest for the Commission to seek the assessment in this matter of the federal health agencies with whom it has been consulting.

1.4.2 In addition, in deciding to extend its transition period, the Commission did not address its original reasons for selecting the January 1, 1997 implementation date. In FCC 96-326 sections 94-119, the Commission gives numerous reasons why the January 1,1997 date is justified. These include the Commission adopting the ANSI/IEEE C95.3-1992 RF measurement guidelines and companies, such as, Jules Cohen and Associates noting these guidelines are appropriate for determining compliance with the IEEE 1991 limits, which are similar to that adopted by the Commission. Moreover, the Commission's existing OET Bulletin 65 provides for determining compliance when there is co-location of commercial radio and TV broadcast stations. Clearly, a good faith effort to use this existing Commission guideline together with ANSI/IEEE C95.3-1992 RF measurement guideline which the Commission adopted [see FCC 96-326 at paragraph #70, 113]. Moreover, none of those common carrier operators seeking an extension of the transition period provided explicit reasons why these above guides would not at least suffice for a temporary period while new materials were developed.

Thus, in so extending the implementation by 9 months, the Commission is acting contrary to its own policies and rationale - without giving reasons for changing them.

1.5. New information related to health effects and assessing exposure is pertinent:

There is new information pertinent to this proceeding which was not available since the last opportunity to file in this matter, i.e. to file with the Commission by October 18, 1996 comments in opposition to extending the transition period and delaying implementation of more stringent exposure limits. This includes:

1.5.1 A peer-reviewed scientific report in the December 1996 Medical Journal of Australia indicating that at levels at or below 1/20th of new exposure limits of the Commission and at or below 1/100th of the exposure limits allowed during the Commission designated transition period, there were 2.74 more deaths from childhood leukemia for children living near television broadcast towers than for those children exposed to less than 1/10,000th of permitted Commission exposures.

1.5.2 An important review study by Mr. Arthur Furstenberg, "Microwaving Our Planet," was distributed in November/December 1996, and was not previously available for review [It is understood Mr. Furstenberg will be submitting a copy of this document to the Commission with his Petition for Reconsideration of this MO&O].. This study focuses on potentially adverse effects occurring at exposure levels far below the 4 W/kg hazard threshold upon which the Commission derived its exposure limits. These data further support evidence that there may be potentially adverse health effects at exposure conditions even permitted by the Commission new rules. Therefore, since for many frequencies Commission exposure limits during the transition period are yet five fold (500%) of the new rules, hence, there is likely yet even a greater potential for endangering the public. Accordingly, the Commission's more stringent exposure limits should be implemented without any further delay, and may be done while the Commission considers the yet more stringent exposure considerations requested by the Ad-Hoc Association in its petition noted above filed September 9, 1996.

1.5.3. Other recent studies and studies which were not reasonably available report adverse effects and include:

(i) Also, a recent study found a 2.74 fold increase in childhood lymphatic leukemia mortality in an area exposed to TV signals at levels no more than 1/20th of FCC 'safe' limits. Yet, there was little increase in lymphatic leukemia morbidity (1.55 fold higher for exposed).[Hocking et al, 1996] This increase only in mortality is consistent with the 1993 conclusions of the FDA that *"the data which exists strongly suggests that microwaves can, under at least some conditions, accelerate the development of malignant tumors."*

(ii) *"Motor function, memory and attention significantly differed between exposed and control groups. Children living in front of the RLS (Radio Location Station) has less developed memory and attention, their reaction time was slower and their neuromuscular apparatus gradually was decreased."* Exposure at 3.7 km in front of the RLS averaged 0.3 microwatts per sq. cm. [Kolodynski et al. 1996]

(iv) A decrease of 18% in REM sleep of adult volunteers in a sleep clinic occurred at 1/12th the Commission exposure level [reported in the Ad-Hoc 96-326 Petition at pg. 3 but this may have been overlooked by the Commission or federal health and safety agencies] [Mann et al. 1996] While these isolated studies may not be conclusive evidence of harm, they are evidence FCC limits may not be safe, and prudence requires taking them into account, adding to the justifications for not delaying implementation.

2. Evidence for more stringent limits already in the record of ET-Docket 93-62 justifies no delay of implementing the Commission's new rules

2.1 Evidence for adverse effects justifies seeking the immediate advice of federal health and safety agencies and then, as appropriate, implementing the Commission's more stringent RF standards without further delay. The Ad-Hoc 96-326 Petition has noted there are indications of adverse health effects at RF exposure levels below an average whole body specific rate of absorption (SAR) of 4 Watts per kilogram (W/kg) of body weight which was the hazard threshold upon which the Commission derived its exposure limits given in FCC 96-326 [Ad-Hoc 96-326 Petition at 3,4,9-11,14-16, and Ad-Hoc Reply of Oct. 28, 1996 at 5-8 ("Ad-Hoc Reply").

2.1.1 The accepted standard setting criteria of "behavioral disruption" has been found by IEEE 1991 committees to occur at levels from 58% to 17% of the Commission's 'hazard threshold' and therefore the Commission should implement its more stringent limits without delay. The typically 5 fold higher limits of the Commission during the transition period compared to new Commission limits may reasonably endanger the public health; hence the transition period should not be extended. Consider that the Commission stated it derived its limits from the 1991 RF standard of the Institute of Electrical and Electronic Engineers ("IEEE"), IEEE C95.1-1991 ("IEEE 1991"), and adopted by the American National Standards Institute in 1992 (ANSI/IEEE 1992), and the 1986 RF standard in Report #86 of the National Council of Radiation Protection and Measurements ("NCRP,1986"). NCRP reports, *"behavioral disruption appears to be the most statistically significant end point that occurs at the lowest observed SAR."* [NCRP1986, page 279]. Also, IEEE 1991 reports, *"The existing MPE's (maximum permissible exposures) are based on the threshold of behavioral disruption with acute (short-term) exposures*

of experimental animals." [IEEE 1991, Section 6.5]. Indeed, the Commission reports that, *"In addition, it (EPA) points out that both the ANSI/IEEE and NCRP guidelines are based on the use of SAR as the fundamental dosimetric parameter, the same criterion for biological effect (behavior disruption), and the same safety factors to define the two tiers of exposure."* [R&O 96-326, paragraph #26]. Moreover, IEEE 1991 selected from the vast scientific literature 20 papers suitable for standard setting [see IEEE 1991 Section 6.3]. Yet, of the Final List of Papers Reviewed for IEEE 1991 there were [as noted in the Ad-Hoc 96-326 Petition at pages 10,11] at least 5 studies which found disruption of behavior (primarily learned behaviors of learning of new behaviors) at average whole body SARs between 2.3 W/kg and 0.7 W/kg (58% and 17% respectively of 4 W/kg FCC hazard threshold). For example, at 17% of the Commission's hazard threshold it was reported,

"Error responding increased during most of the session. [Exposure] produced alterations in 50% of the test sessions (learning a 4 step sequence of tasks) [Schrot et al. 1980]. Also, at 0.2 W/kg (5% of 4W/kg) another study reported behavioral disruption of learned behaviors when animals were also given dextroamphetamine - commonly used to treat Attention Deficit Disorder. The researchers in this study report,

"The response rates were notably higher (too many responses) after microwave radiation, even though the last exposure to radiation occurred 24 hours before the drug was administered," suggesting a cumulative effect [Thomas et al. 1979].

Accordingly, based only upon the accepted criteria of behavioral disruption, and based only upon papers found suitable for standard setting by the IEEE 1991 committees, there is strong evidence that the FCC hazard threshold should be reduced to 17%, or even 5% of its current 4 W/kg level.

Thus, as noted in the Ad-Hoc 96-326 Petition, the Commission may have overlooked or misunderstood the significance of these studies which are documented in the appendix of the IEEE C95.1-1991 standard. For these reasons the Commission may have incorrectly concluded, *"The more conservative limits do not arise from a fundamental change in RF safety criteria for SAR, but from a precautionary desire for more rigor in the derivation of factors which allows*

limits for MPE to be derived from SAR limits." [R&O 96-326, paragraph 3]. Rather, as shown above, there is evidence for a fundamental reducing of the SAR limits, and based on NCRP and IEEE criteria and studies found suitable for standard setting by IEEE 1991 committees.

2.1.2 Other peer-reviewed papers confirm behavioral disruption occurs at 15% to 17% of the Commission's 4 W/kg hazard threshold (disruptions at 0.6 to .7 W/kg), providing further evidence limits may not be sufficient and that the Commission's new limits should be implemented without delay. At least 3 subsequent peer-reviewed studies by at least 2 different investigator groups (and whose authors include those who are members of the IEEE 1991 RF committees) have reported disruption of learned behavior or learning of new behaviors occurs at 0.6, 0.6 and 0.7 W/kg, confirming earlier studies noted above in the Final List of Papers Reviewed For IEEE 1991. (see Lai et al, 1989, Lai 1994, D'Andrea et al, 1986)

Clearly, exposures which disrupt the performance of learned tasks or learning of new tasks is prima facie, an adverse health effect indicating an adverse impact on the central nervous system. By applying the same safety factor of 50 (setting [illegible] exposure limits to 1/50th of the hazard threshold") used by the Commission to the levels at which adverse behavior disruptions occurred would yield [illegible] is traditionally used), then Commission SAR limits would be about 7% of their current value.

2.1.3. A 2.5 fold or more reduction in environmental RF exposure is needed to achieve the internal rate of absorption of RF energy assumed when developing the Commission's environmental RF exposure levels, further supporting implementing the Commission's more stringent limits without further delay. Recent studies in 1992 by O.P. Gandhi et al. report that the average whole body rate of absorption of RF energy is about 2.5 fold higher than assumed when developing the Commission's standard. This study is especially noteworthy because Gandhi uses a computer simulation method called Finite Difference Time Domain ("FDTD"), and the Commission has determined that,

"We note that several publications are available that describe appropriate methods and techniques for determining SAR for compliance purposes. In addition, many papers have been

published in the scientific literature on this topic. We agree with commenting parties that the use of appropriate numerical and computational techniques, such as FDTD analysis, is acceptable for demonstrating compliance with SAR values. Studies by O.P.Gandhi and others indicate that such techniques offer valid means to determine energy absorption characteristics in exposed objects." [R&O 96-326, paragraph #70].

Therefore, the Commission has found both the researcher (O.P. Gandhi), and the method (FDTD) to provide valid SAR results, as far as the Commission is concerned. Therefore, it is especially incumbent upon the Commission to act consistently with its decisions and to preserve the public health by adopting its more stringent limits (or those even more stringent requested in the Ad-Hoc 96-326 Petition), on the basis of the findings of Gandhi using the FDTD method and which show the Commission's exposure limits do not provide asserted protection.

For example, for an ungrounded (isolated) average man exposed to 915 MHz, approximately 13 inch, waves similar to those for cellular phone frequencies, O.P. Gandhi reports average whole body absorption in "E" position (parallel to the electric field) to be about 0.08 W/kg for each 1 milliwatt of RF power per square centimeter of exposed surface (1 mW/sq.cm.). Whereas the Radiofrequency Radiation Dosimetry Handbook, 1986, referenced by IEEE 1991 predicts, for the same conditions, the rate of absorption to be only about 0.03 W/kg for each 1mW/sq. cm [RF Handbook, page 6.4, Fig 6.3], and 0.08 is about 2.5 fold of 0.03. Moreover, Gandhi study shows an almost constant average rate of absorption of 0.08 W/kg per 1 mW/sq.cm. of exposure from 350 MHz to 915 MHz (the highest frequency studied). This strongly suggests that the 0.08 W/kg rate will remain in effect for the near 2000 MHz of Personal Communication Services (PCS). At these high frequencies children and infants can be expected to have a higher rate of absorption since their bodies are shorter and closer in length to the 6 inch PCS waves. For example, the RF Handbook, 1986 shows at above 1500 to 3000 MHz the maximum average SAR of a 1 year old infant is about 2 fold that of an average man. Since

(1) the Commission limits are designed to provide a protection of average SAR =0.08 W/kg, and,

(2) the studies of Gandhi (1992) suggest that for 1 mW/sq. cm. an average man at 1500-to 3000 MHz (including the about 2000 MHz of PCS frequencies) absorbs an average of SAR = 0.08 W/kg (the protection purported by the Commission limits), and above 1500 MHz the Commission allows as high as 1 mW/sq. cm.

(3) 1 year old infants have an average SAR of about 2 fold that of an average man,

(4) newborns, especially premature newborns are smaller and closer to the short wave lengths in the 1500 to 3000 MHz range, and thus can be expected to have an average SAR greater than 1 year old infants,

It therefore follows that even the more restrictive Commission limits may not provide the protection asserted by IEEE 1991and NCRP 1986, and allowed external exposure limits may permit internal RF absorption as much as 250% of that the Commission standards are designed to protect against.

Therefore, the above, not only argues for more stringent standards that the Commission has proposed [for which the Ad-Hoc Association has requested more stringent exposure limits, see Ad-Hoc 96-326 Petition at], but also argues for implementing the Commission's more stringent limits without further delay, especially since the Commission has already determined that results of studies by Gandhi using the FDTD method *"offer a valid means to determine energy absorption characteristics in exposed objects."* [R&O 96-326, paragraph #70]

It should also be noted that studies of Hill (1984) using real persons and Gandhi et al (1989) using FDTD provide support that at frequencies 20 MHz to 100 MHz the average SAR is higher than previously thought, and that at frequencies at which some TV stations broadcast the average SAR may be 2 fold higher than assumed when developing the Commission's exposure criteria. Please note that Hill (1984) was among the Final List of Papers Reviewed for IEEE 1991; as noted the Commission has found Gandhi's FDTD results valid. Hill (1984) presents an analysis for frequencies in the range 3 to 41 MHz, and he gives two arguments for reducing exposure limits and reports, be conservative concerning systematic errors, and consider the sensitivity of 99% of all the people and not just the average. He reports,

"Based on these two arguments, [RF external exposure limits for average man] should be lowered about a factor of 2 for maximum protection." [Hill, 1984, pg.139-141]

Subsequently, in 1989, Gandhi et al using the FDTD method (found valid by the Commission) obtained computer simulation average whole body SAR results for average man electrically grounded and the results were very close to that reported by Hill who used human volunteers. This result serves to strengthen the finding and the validity of the FDTD method.

In addition, the same Gandhi 1989 study also found that at 60 MHz, and for 1 mW/sq. cm. the predicted average SAR for an isolated average man (0.56 W/kg) was about 50% greater than that predicted in a 1982 study by Guy and Chou (about 0.38 W/kg). Again, if 99% of the population is considered and not just averages, a 2 fold reduction of exposure limits for full body exposure is indicated. Consider that TV Channel 2 and 3 are in the frequency range 54-60 MHz and 60 to 66 MHz [see Hitchcock and Patterson, 1992, pg. 501]; hence, the findings of Gandhi are relevant to persons living very close to the main beam of TV broadcast transmitters [a consideration not addressed by Hill], and suggest that just to assure protection of 0.4 W/kg, that the Commission's external exposure limits need to be reduced by 2 fold to 2.5 fold.

Hence, as indicated in 2.1 above, because the Commission defers to the federal health agencies, it is likewise urged to do so in evaluating all the points mentioned in 2.1.1-2.1.3 above, and is urged to do so as it was urged in 2.1.

2.1.4 The implementation period should occur without delay because the RF IEEE 1991 standard which the Commission adopted effective August 1996 and to remain effective during the transition period, has many may deficiencies noted by the Federal health agencies and by the Ad-Hoc 96-326 Petition, and thus it is in the public interest that the transition period end without delay, thereby ending the application of this deficient standard. This standard is so deficient because:

(1) It permits exposures of workers higher than permitted by the Commission's previous standard or by the new standard effective after the 'transition period.' [see Ad-Hoc 96-326 Petition at]

(2) Does not provide the worker protection elements of a traditional RF health and safety program which elements OSHA specified and recommended to the Commission to be in its RF

standard. Moreover, concerning the IEEE 1991 standard OSHA reported to the Commission, "The possible implication that employees may be subjected to a higher level of risk because they *'are aware of the potential for exposure as a concomitant of employment'* is unacceptable to OSHA."

(3) EPA reports IEEE 1991 makes *"unwarranted"* claims its maximum permissible limits "to which a person may be exposed without harmful effect." This claim has been found *"unwarranted"* by the EPA and the Ad-Hoc Association has shown that even among the Final List of Papers Reviewed for IEEE C95.1-1991 there are those showing behavior disruption at 17% of the IEEE 'hazard threshold', and also isolated Final List papers showing effects the authors consider adverse at levels as low as about 0.006 W/kg [see Ad-Hoc 96-326 Petition at 12]. Therefore, its hazard threshold and claims of complete safety within its limits seem to be unsupported by findings amongst its own Final List papers.

Moreover, this unwarranted finding that below the IEEE exposure limits a *"person may be exposed without harmful effect,"* is contrary to the public interest because it serves to neutralize efforts to 'minimize exposure to the extent possible," as recommended by NIOSH the Commission include in its standard (but which the Commission did not heed.) Moreover, should harmful effects occur due to exposure at the unreasonably high levels of RF exposure being allowed to continue in effect, then the grounds for claiming damages in a tort liability action may be diminished, due to operators claiming that the standard asserted people were safe "from harmful effect" within the IEEE limits. Hence, it is in the public interest will be served by the transition period ending without delay so that this IEEE 1991 standard with its unwarranted claims of being safe will not longer be effective.

Also, IEEE 1991 promulgates an unsupported claims that *"no scientific data exist indicating that certain subgroups of the population are more at risk than others."* [IEEE 1991, Section 6. Rationale, page 23]. A 1984 EPA RF radiation report finds otherwise [EPA, 1984, pg. xx,] and EPA so reports to the Commission in 1993 that this IEEE 1991 is "unsupported," citing EPA and NCRP findings.

(5) For the above and other reasons the Commission stated that while many parties recommended the RF IEEE 1991 standard, that because EPA and other federal health agencies had expressed concerns about certain aspects of IEEE 1991 and because EPA recommended the approach of NCRP 1986, therefore the Commission would not adopt the IEEE 1991 standard [see R&O FCC 96-326 at paragraph 28]. Yet, in spite of all of the foregoing, when the Commission adopted its new rules in August 1996 it made the RF IEEE 1991 standard immediately effective in August 1996 for PCS base station applications (e.g. facilities and operations licensed under part 24 of this chapter [in 47 CFR §1.307]) - and now to remain effective at least through August 1997.

(6) No significant benefit to the Commission adopting IEEE 1991 during the transition period. For PCS frequencies the Commission's environmental exposure limit after the Commission's 'transition' period (1000 microwatts per square centimeter) is only 25% less than the IEEE 1991 limit (maximum = 1990 MHz/1.5 = 1326 microwatts per square centimeter). Consider that the key reason given by many operators seeking a delay in implementation of the Commission's new limits is that these limits are a substantial reduction from the previous limit of 5000 microwatts per square centimeter for all frequencies over 1500 MHz, and will require much time for operators to evaluate exposure. However, by the Commission making effective IEEE 1991 for PCS frequencies, it has reduced its limits almost the same amount as will occur under its new limits after the transition period. Therefore, while IEEE 1991 is about 33% greater than the Commission's limits after the transition period, relative to the Commission's previous limits and the concerns of operators that the new limits require preparation time, there is no significant difference between IEEE 1991 and the Commission's new limit after the transition period. Thus, the main reasons the Commission has given for both making and extending the transition period does not apply to IEEE 1991 limits for PCS frequencies.

Thus, in so making IEEE 1991 effective the Commission has acted contrary to its own policies and decisions, and has chosen a standard which does not address the objectives the Commission has given for a transition period or its extension. Hence, because of the noted deficiencies and lack of justification the Commission has acted capriciously and contrary to the public interest.

Accordingly, even if the Commission finds it spite of the reasons given in this Petition to extend the transition period, the Commission should not extend the period in which IEEE 1991 is effective, but without delay to make effective its new rules, at least for the PCS licenses for which IEEE 1991 is now applicable. Even, better, the Commission should adopt the request of the Ad Hoc 96-326 Petition (at page) and recertify all its PCS licenses which have been licensed inappropriately under IEEE 1991, and to license them under the Commissions new limits for PCS frequencies.

2.2 Consideration of the Cellular Telephone Taskforce past comments: In its comments dated October 3, 1996, the Cellular Telephone Taskforce noted its opposition to any delay in implementation of the Commission's rule, and referred to the Telecommunications Act of 1996 which required the Commission "complete action in ET-Docket 93-62 to proscribe and make effective rules regarding the environmental effects of radiofrequency emissions." [Telecommunications Act of 1996, Section 704 C(iii)(b). Hence, by delaying implementation of the rules it has proscribed, the Commission is not making those rules effective and, accordingly, is not abiding by the implicit intent and explicit directive of Congress.

2.3 Past comments of Alan Golden: In Reply comments of Alan Golden dated October 15, 1996 regarding comments to Petitions of Reconsideration pertaining to FCC 96-326, By the Commission noted that it Congress that the Commission [see] that it was noted that doing so would thereby extend exposing the general public and worker population to exposures for which there was strong evidence of adverse effects, and would extend the period in which the IEEE C95.1-1991 standard was in effect - which would be contrary to the public interest because of the deficiencies in this standard noted by federal health agencies in their communications with the Commission and by other deficiencies noted by the Ad-Hoc Association. The comments of Mr. Golden also agreed with the Commission that operators had three years, since they were aware of the Commission's intent in April 1993 to adopt more stringent standards, and since the passage of the Telecommunications Act in February 1996 provided another opportunity to prepare for the more stringent exposure standards.

7. The Commission has misunderstood the expert advice it has received to properly interpret the safety provided by its exposure limits.

Clear evidence that the Commission is misinterpreting the safety provided by its limits is found in its recent announcement, "Frequently Asked Questions" prepared by the Office of Engineering and Technology, of the Commission, which was released after the MO&O and which includes a discussion of the delay. This document also states,

"Exposure to RF levels below these levels [the Commission's limits] is considered to have no detrimental biological effect by expert standards bodies such as the Institute of Electrical and Electronic Engineers, Inc (IEEE) or the National Council of Radiation Protection and Measurements (NCRP)."

7.1 Reference to IEEE: Consider that the Commission has stated it seeks expert advice by deferring to the federal health agencies (as noted above) and in FCC 96-326 para. 28. As noted in this Petition EPA has stated the claim that the IEEE limits (which are similar to Commission limits) provide protection from all mechanisms of interaction as "unwarranted." Also, as noted herein and in the Ad-Hoc 96-326 Petition the other federal health and safety agencies the Commission consulted likewise did not concur with the IEEE limits, definitions, or rationale. Since the Commission states it relies on these federal agencies for expert advice, it is unclear why the Commission justifies its limits by referring to the standard of IEEE, which the federal experts upon which the Commission relies was critical, stating the IEEE standard makes unwarranted and unsupported claims. Such inclusion by the Commission is strong evidence the Commission has overlooked or misunderstood some of the key and correct advice given to it by the federal health and safety agencies the Commission states it defers for advice on these matters.

7.2 Reference to NCRP: The Commission's assertion that NCRP considers *"RF levels below its limits to have no detrimental biological effect,"* is further evidence the Commission has misunderstood this standard and the advice concerning it that was received from EPA. For example, the November 9, 1993 EPA letter from M.Oge to the Commission in this proceeding noted that the NCRP states,

"A response by an organism to RFEM (RF) radiation may have a thermal basis, an athermal basis, or a combined basis. Determination of which of these classes of causation is operative in a given context rests upon appropriate experimentation and inference, not presumption." [NCRP, 1986, page 276]

Also, in its section on Considerations for Future Criteria, NCRP notes a study where there was more than a 3 fold increase in cancer at levels NCRP set for occupational exposure, concluding such findings, *"emphasizes additional work in these important areas is required."* [NCRP, 1986, pg. 2887-289] NCRP also notes another paper [Szmigielski et al. 1982] in which 3 separate studies at levels below the NCRP hazard threshold find evidence of accelerating malignant tumor development. NCRP also notes the paper by Thomas et al. 1979, (noted above) reporting adverse disruption of learning behavior when laboratory animals were given dextroamphetamine (used to treat Attention Deficit Disorder) and at exposure levels 1/20th of the NCRP working hazard threshold. NCRP also notes Eastern European studies showing adverse effects at "a few microwatts," and notes "The results of more recently reported studies are similar to those of earlier studies, but provide more information on critical variables of methodology and statistical analyses. This additional information has led to more attentive assessment of the early reports." [NCRP, 1986, pg. 172].

Therefore, it is clear NCRP does not assert that RF levels below its limits "are considered to have no detrimental biological effects," as the Commission seems to have understood. Accordingly, the Commission should now act without delay to adopt its new rules.

7.1. The addition of a protection criteria of 0.08 Watts per kilogram of bodyweight (W/kg) was made by NCRP in consideration that the general population may be exposed 24 hours a day 7 days a week. Since workers may be exposed at 0.4 W/kg only 40 hours a week, in order to assure that the weekly cumulative exposure of the population does not exceed that of workers the 0.08 W/kg for the general population was adopted by NCRP [see 17.] Thus, no additional measure of safety is provided, but rather provision is made that the same maximum weekly exposure allowed for workers is not exceeded by that allowed for the general population.

If the Commission will be advised that there is no evidence of any cumulative effects which may impact upon health, the Commission should consult the Final List of Papers Reviewed for IEEE C95.1-1991 - these papers are particularly noteworthy insofar as they have been found suitable for standard setting by committees of IEEE who reviewed many papers and excluded those which did not meet its high requirements for use in RF standard setting.

Thus, not only does NCRP 1986 consider that, at least on a weekly basis, there may be cumulative effects, but also a IEEE C95.1-1991 Final List paper concludes there is evidence indicating cumulative effects.

7.2 Both NCRP 1986 and EPA note that infants and those who are ill or with disabilities may be more adversely affected by thermal effects from RF exposure, and to adequately assure their protection more stringent limits are indicated. Consequently, the more stringent limits of the Commission's new rules should not be viewed as just providing extra measures of protection, but rather, provide exposure protection considered essential by EPA to protect the more vulnerable persons who are members of sub-populations which are particularly susceptible to RF effects. Indeed, EPA noted in its comments of November 9, 1993 to the Commission that the claim in IEEE C95.1-1991 that there were no such sub-population groups more susceptible was "unsupported" by evidence of the EPA.

8. Extending the implementation date continues a contradictory policy by the Commission concerning permitted limits on specific rate of absorption of RF, thereby making its rules during its 'transition' period unenforceable. By making effective in August 1991 the RF IEEE 1991 standard for PCS base station facilities and operations, the Commission adopted a standard which set 0.08 W/kg as the maximum average whole body SAR to which persons in an 'uncontrolled' environment (e.g. residential areas) may be exposed. Also, for other frequencies, the Commission allows exposures as high as 0.4 W/kg. In numerous places the Commission and operators have recognized that when there is co-location, the Commission's exposure limits corresponding to 0.08 W/kg may be exceeded. The general methods for addressing mixed frequencies, is to find what fraction is the square of the electric or magnetic field strength relative to the square of its allowed limit (e.g. see IEEE 1991 Appendix C: Exposure from multiple

sources). One may argue that one could mechanically follow this method, applying limits for PCS frequencies that relate to protection not to exceed 0.08 W/kg, and for the other frequencies, to apply limits that relate to protection not to exceed 0.4 W/kg. However, this approach is contrary to a basic assumption of the IEEE 1991 standard, namely that all computations for exposure from mixed sources are based upon assuring that the maximum permissible limits are associated with assuring the basic protection of 0.08 W/kg is not violated.

Hence, as it now stands, if at an existing location without any PCS services external exposures are such that the predicted average whole body SAR for 'uncontrolled' environments is less than 0.4 W/kg but more than 0.08 W/kg, it is impossible to allow any PCS service to be located there, since this would necessarily expose persons in the uncontrolled environment to be subject to an average whole body SAR greater than 0.08 W/kg, which the IEEE 1991 standard does not allow, regardless of how small a fraction the increased exposure may be.

Accordingly, by extending the transition period the Commission is asserting it is possible to allow two sets of standards to exist at the same location, one permitting up to 0.4 W/kg and one permitting no more than 0.08 W/kg. Since this is a logical impossibility, the Commission's establishment of a transition period with two sets of standards for the same parameter is impossible to enforce under the very circumstances for which the Commission and operators deem such a transition period needed. Hence, the Commission's establishment of a transition period with its two sets of standards is unenforceable.

9. None of the petitioners seeking an extension of the transition period have given convincing reasons that implementation by January 1, 1997 is unreasonably burdensome and/or not feasible

9.1 The need to evaluate thousands of sites does not make the original implementation date infeasible. Many operators, petitioners and commentators on petitions, have asserted that because there are many thousands of sites to evaluate that the original implementation date is not feasible. This argument is faulty because each site needs maintenance once each month or two, and while at the site technicians can verify the maximum exposure for which the site is rated, based on the transmitters at the site, their maximum effective radiated power, and the vertical and

horizontal distances to locations where the public may be exposed. Simple software programs on laptop, battery powered computers can then calculate maximum exposure predicted - indeed, formulas may be used upon which the current OET Bulletin 65 is based. Therefore, sheer quantity of total transmitters is not a factor in extending the transition period.

Moreover, many of the new transmitters will be for PCS base station facilities and services and operators will need to determine that the total predicted average whole body SAR from all sources does not exceed 0.08 W/kg. Hence, much of the effort claimed 'not feasible' will still be required due to the Commission's making effective rules that provide the total exposure should not exceed an average SAR of 0.08 W/kg.

9.2 The lack of a revised Bulletin 65 is not a justification for delaying implementation. Sufficient existing standards and instructional guides exist providing sufficient guidance for implementing the Commission's new rules. Both existing OET Bulletin 65 and IEEE C95.3-1991 describe general measurement techniques, which can be used after considering that certain previously categorically excluded services are no longer so excluded. Indeed, IEEE C95.3-1991 was explicitly noted by the Commission as a standard for measuring exposure. Moreover, this is a general standard designed to describe how to determine if any set of RF exposure requirements are met. While it may be slightly more convenient for some to have a revised Bulletin 65, this is certainly not a necessity, especially for common carriers who have the technical expertise to interpret and adopt these documents to meet the Commission's new rules.

9.3 Carriers and the Commission continues to assert that typical transmitters are 'thousands' of times below the new exposure limits [see xxxxxxx]. Accordingly, this indicates that operators have already determined that few transmitters will be affected by the new rule, and indicate that operators have a means to evaluate existing exposures. Moreover, based upon the documentation of operators and the Commission that transmitters are 'thousands of times' below limits, then certainly a dozen or so transmitters co-located together will still be expected to be within limits. While the Ad-Hoc Association suspects that limits may be exceeded [see Ad-Hoc 96-326 Petition at], from the perspective of operators or the Commission documentation

claims otherwise, and hence reported concerns by operators appear inconsistent with what is reported elsewhere by the Commission and operators.

Moreover, claims by operators that they will be unaware of other facilities co-located at or near their facility must be questioned in light of the industry establishing a database where the location of each transmitter is identified. [see Journal of Microwave Power which reports .....]

Finally, operators concerned about co-location matters can establish in their lease that the owner of the facility will designate one party licensed to measure and monitor exposure for all co-located transmitters and provide this information to the affected parties. Thus, by excercising due prudence means can be found to monitor total exposure from co-located transmitters without delaying implementation until all co-location issues are resolved.

9.4 On a practical basis, if and when exceeding limits may occur, initial warnings and seeking solutions are the expected outcomes - these do not justify delaying implementation. The tone of those seeking delaying implementing new rules suggest heavy fines and significant punitive action is expected should the Commission's new rules not be met. But this is neither required nor even expected. Certainly, the Commission expects that during the early period of implementation that there may be oversights and a 'learning curve' implementing the new rules. Accordingly, to avoid a timely implementation of the Commission's new rules necessarily increases the risks that the population will be subject to higher exposure. Certainly this risk is less if the more stringent limits are adopted, and then as the exceeding of limits is discovered, should it occur, warnings can be given and solutions sought as needed. The few anticipated cases where such exceeding may occur, and warnings given, does not justify delaying the implementation of more protective limits.

9.5 At best, arguments of operators justify allowing the transition period only for existing, but not new transmitter facilities and operations. One of the key reasons for delaying implementation is that there are so many existing sites that applying the new rules to them at the original implementation date was not feasible. If this reason is found to be just and fair and in the public interest, it still does not justify allowing new facilities to be licensed under other than the new Commission rules now effective after the implementation period. This is because during the

siting process operators can determine what is the existing exposure and if the proposed site will exceed exposures. Then through the use of the means noted above (periodic site checking by maintenance crews, agreements with site owner to assure one competent party monitors exposure, an industry database to track transmitters and their exposures) most of the risks for an out-of-compliance event can be significantly reduced. Hence, if it is not found that it is just, fair and in the public interest to implement the new Commission rules without delay, this should at least apply to all new and renewal applications.

10. Footnotes

- Z. Balode, "Assessment of radio-frequency electromagnetic radiation by the micronucleus test in Bovine peripheral erythrocytes," the Science of the Total Environment, 180 (1996) pg. 81-85

- A.A. Kolodynski, "Motor and psychological functions of school children living in the area of the Skrunda Radio Location Station n Latvia," the Science of the Total Environment, 180 (1996) pg. 87-93

- B. Hocking et al, "Cancer incidence and mortality and proximity to TV Towers," Medical Journal of Australia, December 1996, vol 165, 601-605

-K. Mann et al, "Effects of Pulsed High Frequency Electromagnetic Fields on Human Sleep," Neuropsychobiology, 1996, vol 33, pg. 41-47

- D. Hill, "The Effect of Frequency and Grounding on Whole-Body Absorption of Humans in E-Polarized Radiofrequency Fields," Bioelectromagnetics,5: 131-146 (1984)

- O.P. Gandhi et al. "Specific Absorption Rates and Induced Current Disrtributions in an Anatomically Based Human Model For Plane-Wave Exposures," Health Physics, 1992, vol 63, No.3, pg. 281-290.

- J. Chen and O. Gandhi, "RF currents induced in an anatomically based model of a human for plane wave exposures (20-100 MHz)," Health Physics, 57: pages 89-98, 1989\

11. Conclusion: For all of the above reasons the Commission should

1. End the transition period without delay, and do not extend it through August 1997, and if this is found not to be just, fair, and in the public interest, then,

[illegible] PCS facilities and operations, and

2. End the transition period without delay for all base station PCS facilities and operations, and for all new and renewal applications.

3. Be consistent in its policies and decisions that it does not have expertise on the health effects of RF exposure, and act in the public interest so that in matters and standard setting related to (i) the biological and health effects of RF exposure, and to (ii) the relationship between environmental exposure and internal rate of absorption of RF energy, the Commission seeks out comment on this Petition from federal health and safety agencies and defers to the advice of these agencies whose advice the Commission has sought in the ET-Docket 93-62 proceeding. The Commission should seek such comments from federal health and safety agencies because these agencies may also have overlooked, misunderstood, or not have available material noted in this Petition and which is substantially significant to when the Commission's transition period should end to best serve the public interest.